General

Guideline Title

Best evidence statement (BESt). Use of a weighted or pressure device to modify behavior in children with a sensory processing disorder.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BESt). Use of a weighted or pressure device to modify behavior in children with a sensory processing disorder. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2012 Feb 9. 6 p. [14 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of the evidence (1aâ€'5b) are defined at the end of the "Major Recommendations" field.

1. It is recommended that the decision to use therapeutic weighted devices be determined by clinical judgment of the therapist with consideration of child and family preferences for children with sensory processing difficulties who present with:
    a. Poor attention to task (VandenBerg, 2001 [3b]; Fertel-Daly, Bedell, & Hinojosa, 2001 [4b])
    b. Self-stimulatory behaviors (VandenBerg, 2001 [3b]; Fertel-Daly, Bedell, & Hinojosa, 2001 [4b])
    c. Increased arousal level (Local Consensus [5])
    d. Sensory modulation difficulties (Local Consensus [5])
    Note: Low level evidence suggests that weight and pressure inputs provide both tactile and proprioceptive input to the body that is theorized to be calming to the central nervous system (Stephenson & Carter, 2009 [1b]; Fertel-Daly, Bedell, & Hinojosa, 2001 [4b]; Grandin, 1992 [4b]).

2. It is recommended that when applying a therapeutic weighted vest:
    a. Weights be distributed evenly around the vest (Local Consensus [5])
    b. Total weight for initial application is recommended to be 5% of body weight; modifications may be made based on therapist's clinical reasoning (Local Consensus [5]; Olson & Moulton, "Occupational," 2004 [5b]; Olson & Moulton, "Use," 2004 [5b])

3. It is recommended that the decision to use therapeutic devices that provide pressure be determined by clinical judgment of the therapist with consideration of child and family preferences for children with sensory processing difficulties who present with:
    a. Increased arousal level (Edelson et al., 1999 [4b])

b. Anxiety (Edelson et al., 1999 [4b])
c. Poor attention to task (Local Consensus [5])
d. Sensory modulation difficulties (Local Consensus [5])
e. Postural control difficulties (Local Consensus [5])

4. It is recommended that when applying a pressure vest:
   a. Pressure level be adjusted to the child's preference
   b. Skin integrity be assessed after wearing for 20 minutes
   c. Skin integrity be assessed with signs of discomfort
   d. Child be monitored for signs of overheating

   (Local Consensus [5])

5. It is recommended, when using with children who have a background of trauma such as physical abuse, that caution be used when applying therapeutic weighted or pressure devices (Local Consensus [5]).
6. There is insufficient evidence and a lack of consensus to make a recommendation on the length of time (minutes) therapeutic weighted and pressure devices may be used.

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local consensus

†a = good quality study; b = lesser quality study

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
It is recommended that… It is recommended that… not…	There is consensus that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation…	

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Sensory processing difficulties

Guideline Category

Management

Clinical Specialty

Family Practice

Pediatrics

Psychology

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Guideline Objective(s)

To evaluate in children with sensory processing difficulties over the age of one if the use of a therapeutic weighted or pressure device (passive input) compared to no passive input is effective in improving a child's behavior (self-stimulatory behaviors and attention to task) or arousal level

Target Population

Children over the age of one year old with sensory processing difficulties

Exclusions:

- Therapeutic weighted device: children with compromised posture, children with poor postural endurance, children with poor skin integrity
- Therapeutic pressure device: children with poor skin integrity

Interventions and Practices Considered

Therapeutic weighted vest or pressure device

Major Outcomes Considered

- Child's behavior (self-stimulatory behaviors and attention to task)
- Arousal level

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy

- Articles: Eleven articles were found to be appropriate for review.
- Search Engines: OVID MEDLINE, OVID CINAHL, OVID EBM Reviews (Cochrane), PubMed Clinical Queries, AOTA, APTA's Hooked on Evidence, APTA Section of Pediatrics, Can Child, CATS, PEDro, Pediatric PT, SPD Foundation, Spiral Foundation, TRIP
- Search Terms: Compression, Compression+garment, Pressure Devices, Benik, Theratogs, Miracle belt, Body sock, Lycra shirts, Bear hug, Weighted vest, Weighted belt, Weighted lap pad, Weighted hats, Weighted gloves, Weighted balls, Weighted backpack alone, and as Boolean phrase: +sensory integration, +Autism, +ADHD, +Occupational Therapy, +Children, +Behavior, +Self-stimulation
- Search Limits: English language, year: 1980 through July 2011

Number of Source Documents

Eleven articles were found to be appropriate for review.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
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Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
It is recommended that… It is recommended that… not…	There is consensus that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation…	

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

The Best Evidence Statement has been reviewed against quality criteria by 3 independent reviewers from the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence Collaboration.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Edelson SM, Edelson MG, Kerr DC, Grandin T. Behavioral and physiological effects of deep pressure on children with autism: a pilot study evaluating the efficacy of Grandin's Hug Machine. Am J Occup Ther. 1999 Mar-Apr;53(2):145-52. PubMed

Fertel-Daly D, Bedell G, Hinojosa J. Effects of a weighted vest on attention to task and self-stimulatory behaviors in preschoolers with

pervasive developmental disorders. Am J Occup Ther. 2001 Nov-Dec;55(6):629-40. PubMed

Grandin T. Calming effects of deep touch pressure in patients with autistic disorder, college students, and animals. J Child Adolesc Psychopharmacol. 1992 Spring;2(1):63-72. PubMed

Olson LJ, Moulton HJ. Occupational therapists' reported experiences using weighted vests with children with specific developmental disorders. Occup Ther Int. 2004;11(1):52-66. PubMed

Olson LJ, Moulton HJ. Use of weighted vests in pediatric occupational therapy practice. Phys Occup Ther Pediatr. 2004;24(3):45-60. [24 references] PubMed

Stephenson J, Carter M. The use of weighted vests with children with autism spectrum disorders and other disabilities. J Autism Dev Disord. 2009 Jan;39(1):105-14. [45 references] PubMed

VandenBerg NL. The use of a weighted vest to increase on-task behavior in children with attention difficulties. Am J Occup Ther. 2001 Nov-Dec;55(6):621-8. PubMed

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Improving a child's behavior (self-stimulatory behaviors and attention to task) or arousal level

Potential Harms

- Potential risks of weighted device use include muscular fatigue, skin irritation, discomfort, and overheating.
- Potential risks of pressure devices include skin irritation, discomfort, and overheating.

Qualifying Statements

Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2012 Feb 9

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

Guideline Committee

Best Evidence Statement (BESt) Development Team

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BESt Development Team: Kristen Brevoort, MOT, OTR/L, Team Leader, Division of Occupational Therapy and Physical Therapy; Amy Brennan, MS, OTR/L, Division of Occupational Therapy and Physical Therapy; Victoria McQuiddy, MHS, OTR/L, Division of Occupational Therapy and Physical Therapy

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Financial Disclosures/Conflicts of Interest

All Team Members and Clinical Effectiveness support staff have signed a conflict of interest declaration.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Jan. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Feb 29. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on May 8, 2012.

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